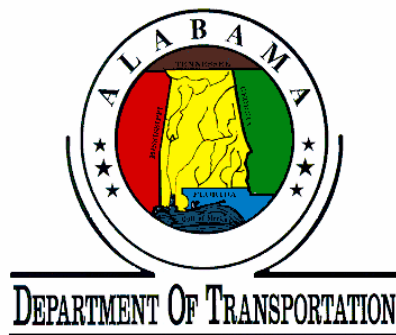


**SUMMARY REPORT FOR
ADDENDUM 4 SAMPLING RESULTS
FOR NOVEMBER 15 AND 16, 2001 AND
FEBRUARY 13 AND 14, 2002
INVESTIGATION OF
“LOW-LYING AREAS”**

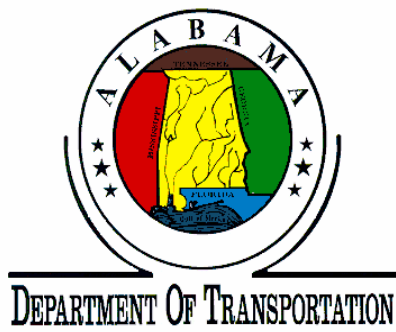
**Coliseum Boulevard
Plume Investigation**



April 8, 2002

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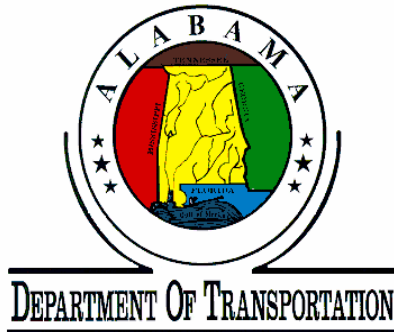
**The Alabama Department of Environmental Management
Montgomery, Alabama**



**SUMMARY REPORT FOR
ADDENDUM 04
SAMPLING RESULTS FOR
NOVEMBER 15 AND 16, 2001 AND
FEBRUARY 13 AND 14, 2002
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April 8, 2002**

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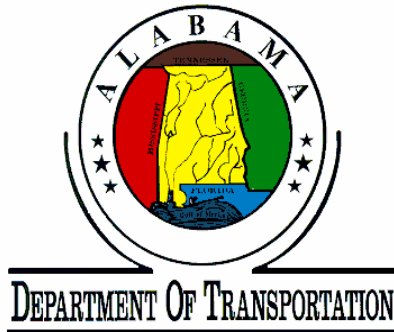
**SUMMARY REPORT FOR
ADDENDUM 04
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Background

On September 17, 2001, the ADEM (Alabama Department of Environmental Management) approved the Alabama Department of Transportation (ALDOT) work plan for investigation of the "low-lying" areas as defined in Addendum 04. A field team consisting of a biologist and geologist reconnoitered the low-lying areas identified in Addendum 04 on October 4, 5, 8, and 9, 2001. The purpose for the reconnaissance was to select locations for collecting soil and surface-water samples for VOCs (volatile organic compounds) analyses.

Intermittent and perennial streams were identified and their channels were followed to determine the directions of flow. Several channels that carry water to the low-lying areas were also located. Fluvial features such as low sections in dry channels, seeps, and depositional areas of streams were recorded. Channel locations and low-lying areas that were identified are shown on see Figure 1.

The coordinates for the potential sampling locations were estimated using a Garmin GPS (Global Positioning Satellite) 12 unit. The field team reviewed all of the field selected sites and selected 16 locations. The ADEM had requested to review the selected sampling locations prior to collection of soil and surface-water samples. The 16 proposed sampling locations were submitted to the ADEM on October 24, 2001. The ADEM verbally approved the sampling locations on November 2, 2001.



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Sample Locations

The locations of the 16 sites are shown on Figure 1 and described in Table 1.

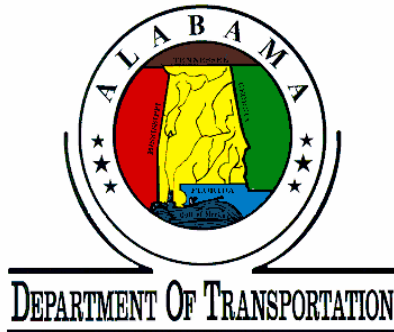
TABLE 1. Soil and Surface Water Sample Locations; Coliseum Boulevard Plume Site, Montgomery, Montgomery County, Alabama.	
Sample Location Identifier	Description
A	Seep
B	Low point of a multi-branching channel. Water flows in, pools until it overflows into other channels.
C	Low point of an interconnecting channel between two intermittent streams.
D	Low point of cross- branching channels.
E	Low point of a channel (ground water at surface).
F	Same as B except only one channel flows out.
G	End of intermittent stream, discharges into Three Mile Branch.
H	Depositional area (sand bar)
I	Depositional area (sand bar)
J	Depositional area (mud flat)
K	Low point (water pools)
L	Depositional area (sand bar)
M	A low point in the field
N	Culvert (water outflow)
O	Low point at bottom of hill
P	Culvert (water inflow)

Summary of Field Activities

Soil and surface water samples were collected at the 16 sites on November 15 and 16, 2001, and February 13 and 14, 2002. During the November 2001 sampling event, surface-water samples could not be collected at some locations due to an absence of water in some of the channels, therefore; only soil samples were collected at those

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locations. On January 7, 2002, ALDOT requested to resample after the areas became inundated with water to allow for a complete ground water sampling event at all of the selected locations. The additional sampling event was performed on February 13, and 14, 2002.

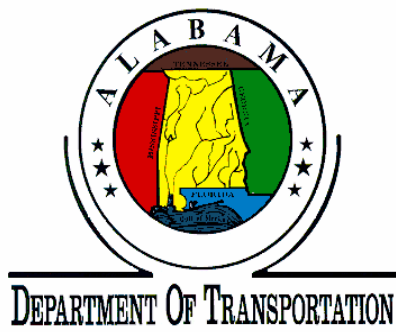
Sample Collection

In the approved scope of work the stated method of collecting submerged soil samples was using a Wildco Hand Core Sampler (Wildco Sampler). However, roots, timber, aggregate, and similar obstructions prevented pushing of the Wildco Sampler deep enough into the soil for collection of samples. As such, a hand auger was used to collect the soil samples.

All sampling equipment was cleaned and decontaminated in the following order:

- Particulate matter and any surface film were removed by washing the equipment with a brush using tap water and a phosphate-free soap solution.
- Tap water rinse
- Deionized water rinse
- Isopropyl alcohol rinse
- Deionized water rinse
- All fluids generated during decontamination were collected in 5 gallon plastic buckets and transported to the Central Staging Area for treatment and disposal.

Soil samples were collected from the hand auger using a 5-gram EnCore sampler. All soil samples were collected immediately above the first stiff silt or clay layer or if a layer had excessive organic content. All samples were proposed to be collected within the first 20-inches BLS (below land surface). Soil samples were collected at a depth between 2 and 12-inches BLS at all sampling locations during the November 2001 and February 2002 sampling events.



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Nine surface water samples were collected during the November 2001 sampling event (sample locations A, H, I, J, K, L, M, N, and P). Water samples were not collected at the other seven sampling locations (sample locations B, C, D, E, F, G, and O) because of an absence of water. Surface water samples were collected at all 16 sampling locations during the February 2002 sampling event. Each surface water sample was collected by slowly lowering an upright VOC glass vial with hydrochloric acid preservative into the water to almost fill the vial. The cap of the VOC vial was used to add water to form a meniscus before sealing the vial with a Teflon lined cap. Duplicate samples were collected at 10 percent of the total number of sample sites. An equipment rinseate was collected for each day of sampling and a trip blank was placed in each cooler.

Soil and surface-water samples were immediately placed on ice, in a cooler, and shipped to **TTL's** laboratory for VOC analyses using chain-of-custody procedures. The samples were analyzed for VOC's using Method 8260 as outlined in Test Methods for Evaluating Solid Waste Physical/Chemical Methods, EPA, SW-846, 3rd Edition, November 1986.

Evaluation of Data

TCE (trichloroethylene) and toluene were the only constituents detected in the surface-water samples. TCE, toluene, benzene, trichlorofluoromethane, and methylene chloride were detected in the soil samples. At sample locations A through H, TCE was not detected in any of the soil or surface-water samples. TCE was detected in the soil and/or surface-water at sample locations I through P (with the exception of sampling locations M and O). The analytical results for samples collected on November 15 and 16, 2001 and February 13 and 14, 2002 are presented in the Table 2 and in Figure 2. (Note: Methylene chloride is a common laboratory compound and is believed not to be present in the soil samples.) Laboratory reports are included in Attachment A.

The collected data was compared to the ecological screening guidance developed by U.S. EPA, Regions III and IV. EPA's Region IV Office of Technical Services (OTS) developed screening numbers for hazardous waste sites. In the EPA; Region IV; Ecological Risk Assessment Bulletins-Supplement RAGS (updated November 2001), the screening numbers represent a preliminary screening of site contaminant levels to determine the need to conduct further investigation at a site.

Summary Report for Addendum 04
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Table 2. Concentrations of volatile organic compounds¹ (VOCs) in samples of soils and surface water; "Low-Lying Areas" Investigation; April 2002 Status Report; Coliseum Blvd. Plume Site; Montgomery, Alabama.
[Distributions of VOCs in soils and ground water are shown on Figure 2.]

Sample Location		Aqueous Lab Results		Approximate Sample Depth (inches)	Soil Lab Results				
		Trichloroethylene	Toluene		Trichloroethylene	Trichlorofluoromethane	Benzene	Toluene	Methylene Chloride ²
		[Concentrations are in micrograms per liter (µg/l)]			[Concentrations are in micrograms per kilogram (mg/kg)]				
Sample Date	MDL ³ = 1.0 µg/l	MDL ³ = 1.0 mg/l	MDL ⁴ = 3.0 µg/kg	MDL ⁴ = 3.0 µg/kg	MDL ⁴ = 3.0 µg/kg	MDL ⁴ = 3.0 µg/kg	MDL ⁴ = 3.0 µg/kg		
A	11/15/2001	ND ⁵	ND	6	ND	ND	ND	ND	4.3J
A	2/13/2002	ND	ND	12	ND	6.3	ND	ND	ND
B	11/15/2001	NC ⁶	NC	5	ND	ND	ND	ND	3.6J
B	2/13/2002	ND	ND	10	ND	ND	ND	ND	ND
B - duplicate ⁷	2/13/2002	ND	ND	10	ND	ND	ND	ND	ND
C	11/15/2001	NC	NC	8	ND	ND	ND	ND	5.7J
C	2/13/2002	ND	ND	8	NR ⁸	NR	NR	NR	NR
D	11/15/2001	NC	NC	8	ND	ND	ND	3.3J ⁹	ND
D-duplicate	11/15/2001	NC	NC	8	ND	ND	ND	12.4J	ND
D	2/13/2002	ND	ND	8	ND	ND	5.0	ND	ND
E	11/15/2001	NC	NC	4	ND	ND	ND	25.5J	3.9J
E	2/13/2002	ND	ND	7	ND	ND	ND	9.5	ND
F	11/15/2001	NC	NC	6	ND	ND	ND	8.8J	10.6J
F	2/13/2002	ND	1.1J	11	ND	ND	ND	ND	ND
G	11/15/2001	NC	NC	10	ND	ND	ND	ND	ND
G	2/13/2002	ND	ND	7	ND	14.4	ND	ND	ND
H	11/15/2001	ND	ND	6	ND	ND	ND	ND	ND
H	2/13/2002	ND	ND	4	ND	ND	ND	ND	ND
I	11/16/2001	4.6J	ND	3	ND	ND	ND	ND	ND
I	2/14/2002	5.0J	ND	5	12.1	ND	ND	ND	ND
J	11/16/2001	2.8J	ND	8	ND	ND	ND	ND	ND
J	2/14/2002	3.9J	ND	5	ND	ND	ND	ND	ND
K	11/16/2001	4.9J	ND	8	ND	ND	ND	ND	3.1J
K-duplicate	11/16/2001	4.9J	ND	8	ND	ND	ND	ND	ND
K	2/14/2002	16.4J	ND	11	ND	ND	ND	ND	ND
K-duplicate	2/14/2002	16.2J	ND	11	ND	ND	ND	ND	ND
L	11/16/2001	2.9J	ND	10	3.9J	ND	ND	ND	3.1J
L	2/14/2002	7.9J	ND	8	ND	ND	ND	ND	ND
M	11/16/2001	ND	ND	10	ND	ND	ND	ND	4.8J
M	2/14/2002	ND	ND	10	ND	ND	ND	ND	ND
N	11/15/2001	7.0J	ND	3	50.6J	ND	ND	16.4J	6.6J
N	2/13/2002	16.8J	ND	9	ND	ND	ND	ND	ND
O	11/15/2001	NC	NC	3	ND	ND	ND	3.3J	3.1J
O	2/13/2002	ND	ND	8	ND	ND	ND	ND	ND
P	11/15/2001	16.8J	ND	2	ND	7.1J	ND	ND	ND
P	2/13/2002	41.2	ND	9	10.6	ND	ND	ND	ND
Rinsate	11/15/2001	ND	ND	NA ¹⁰	NA	NA	NA	NA	NA
Blank	11/15/2001	ND	ND	NA	NA	NA	NA	NA	NA
Rinsate	2/13/2002	ND	ND	NA	NA	NA	NA	NA	NA
Blank	2/13/2002	ND	ND	NA	NA	NA	NA	NA	NA
Rinsate 2	11/16/2001	ND	ND	NA	NA	NA	NA	NA	NA
Blank	11/16/2001	ND	ND	NA	NA	NA	NA	NA	NA
Rinsate 2	2/14/2002	ND	ND	NA	NA	NA	NA	NA	NA
Blank	2/14/2002	ND	ND	NA	NA	NA	NA	NA	NA

Notes:

¹ The sample was analyzed in accordance with Method 8260 outlined in Test Methods for Evaluating Solid Waste Physical/Chemical Methods, EPA, SW-846.

² Methylene Chloride was detected in 11 soil samples. Methylene Chloride is believed to have been present in the laboratory during analysis of the soil samples.

³ MDL = Method Detection Limit of 1.0 micrograms per liter for the aqueous laboratory analyses

⁴ MDL = Method Detection Limit of 3.0 micrograms per kilogram for the soil laboratory analyses

⁵ ND = Not Detected

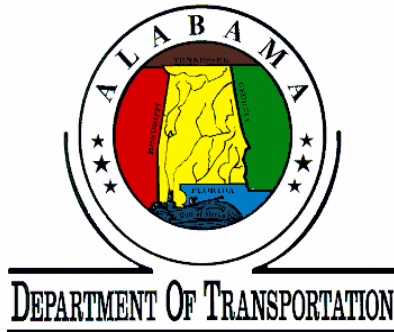
⁶ NC=Not Collected, aqueous sample not collected because surface water was not present.

⁷ Duplicate samples were collected on November 15 and 16, 2001 and February 13 and 14, 2002 for quality assurance/quality control purposes.

⁸ NR = Not Reported, analytical results were not reported by STL laboratories because the soil sample appeared to have something in the matrix which caused the sample not to purge.

⁹ J = Concentration below the calibration curve, but above the detection limit

¹⁰ NA = Not analyzed



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However, Region IV has only developed screening levels for toluene in water. As such, the screening values from the U. S. EPA; Region III; Biological Technical Assistance Group (BTAG); 1995, were used for comparison. The Region III screening values are considered protective for sensitive organisms. The comparison of screening values and sampling data is presented in Table 3 and indicates that the detected concentrations in the soil and surface water samples are significantly less than the values established in the screening guidance. Based on the November 2001 and February 2002, results, the detected concentrations of TCE and toluene in the surface water, and the detected concentrations of TCE, toluene, benzene, and trichlorofluoromethane in the soil samples do not pose an ecological risk.

Recommendation

The ALDOT recommends quarterly soil and surface-water sampling at locations I, J, K, L, M, N, O, and P for one year. The intent is to determine if VOC concentrations fluctuate seasonally. The first quarterly sampling event would be in May 2002 with the following events being performed in August and November 2002 and March 2003. After one year of monitoring the ALDOT will determine if an ecological risk assessment should be performed.

Table 3. Preliminary ecological screening evaluation of volatile organic compounds¹ (VOCs) in soils and surface water; "Low-Lying Areas" Investigation: Colisum Blvd. Plume Site: Montgomery, Alabama.

Soil	Maximum Concentration (µg/kg)²	Depth of Sample (inches)	Screening Level (ppb)³	Exceeds Screening Level
Trichloroethylene	50.6	3	300	No ⁴
Toluene	25.5	4	100	No ⁴
Benzene	5.0	8	5,300	No ⁴
Trichlorofluoromethane	14.4	7	11,600	No ⁴
Methylene Chloride	NA	NA	NA	NA
Aqueous	(µg/L)⁶			
Trichloroethylene	41.2	NA	21,900	No ⁴
Toluene	1.1	NA	175	No ⁵

¹ The sample was analyzed in accordance with Method 8260 outlined in Test Methods for Evaluating Solid Waste Physical/Chemical Methods. EPA, SW-846

² MDL = Method Detection Limit 3.0 micrograms per kilogram for the soil laboratory analyses

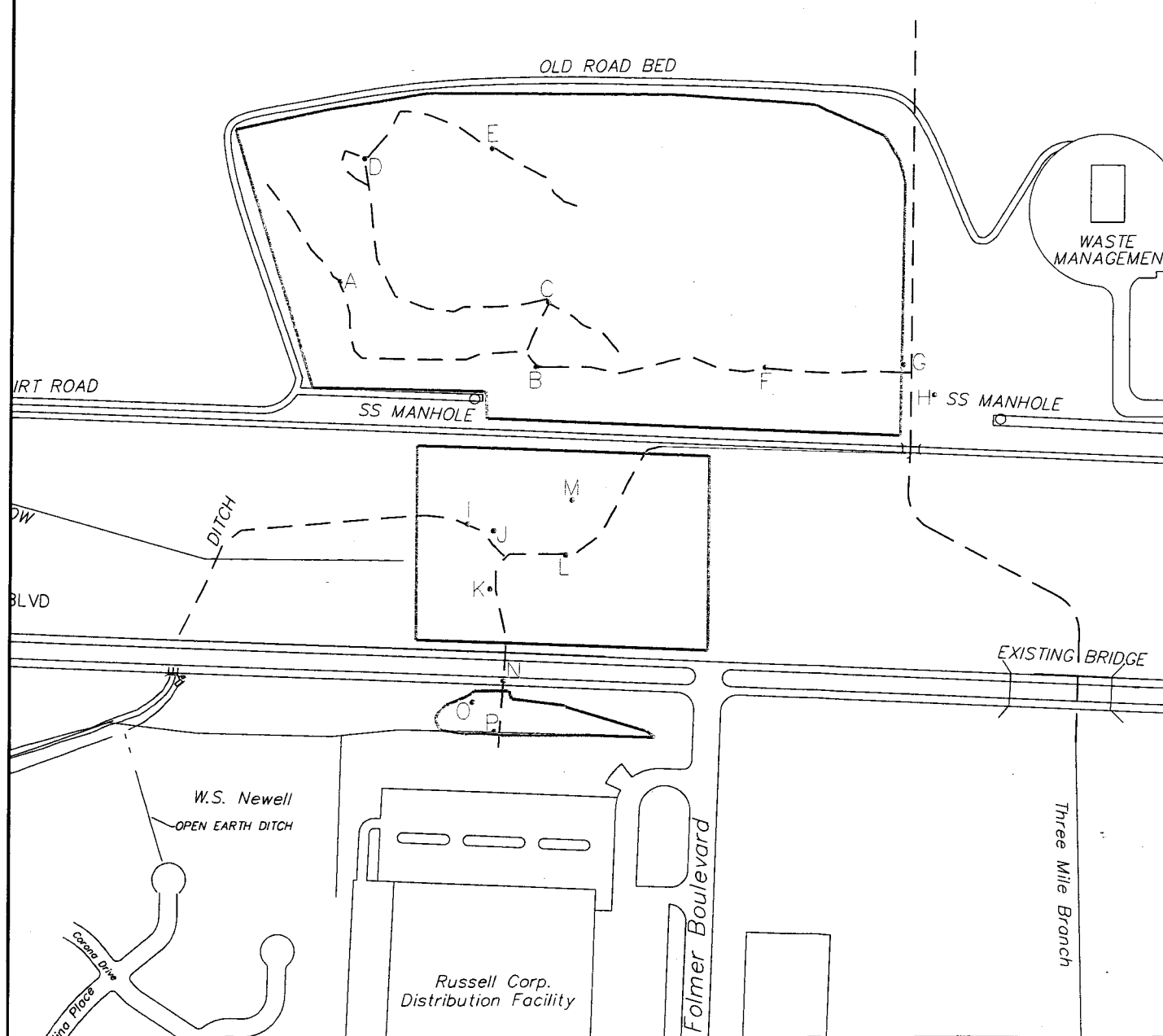
³ The screening levels were reported in ppb (parts per billion)

⁴ The soil screening values were obtained from the U. S. EPA Bulletin, Region IV Ecological Risk Assessment Bulletins-Supplement RAGS.

⁵ The screening values were obtained from the U. S. EPA Document, Region III, BTAG Screening Levels, 1995.


⁶ MDL = Method Detection Limit of 1.0 micrograms per liter for the aqueous laboratory analyses

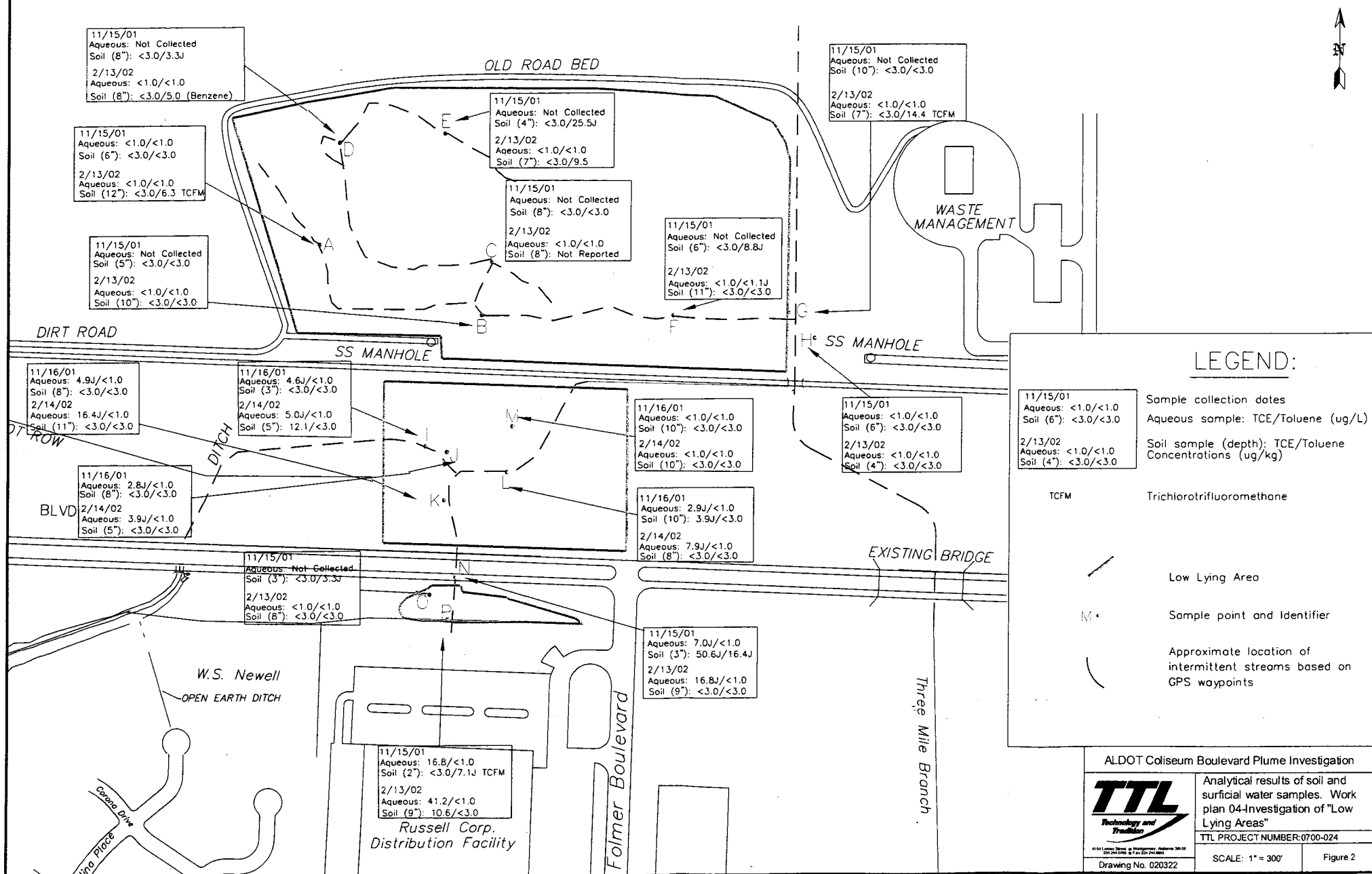
FIGURES



LEGEND:

- Low Lying Area
- Sample point and Identifier
- Approximate location of intermittent streams based on GPS waypoints

ALDOT Coliseum Boulevard Plume Investigation		
	Sampling locations for soil and surficial water samples. Work plan 04-Investigation of "Low Lying Areas"	
	TTL PROJECT NUMBER: 0700-024	
	SCALE: 1" = 300'	Figure 1
Drawing No. 020322		



ALDOT Coliseum Boulevard Plume Investigation



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Analytical results of soil and surficial water samples. Work plan 04-Investigation of "Low Lying Areas"

TTL PROJECT NUMBER: 0700-024

SCALE: 1" = 300'

Figure 2

ATTACHMENT
(Refer to GIS Database)